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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,398	07/30/2003	Kiyoshi Sato	9281-4593	8367
757	7590	03/01/2006	EXAMINER	
BRINKS HOFER GILSON & LIONE P.O. BOX 10395 CHICAGO, IL 60610			KIM, PAUL D	
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			3729	
DATE MAILED: 03/01/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/630,398	Applicant(s) SATO, KIYOSHI	
	Examiner Paul D. Kim	Art Unit 3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 14-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/679,654.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/30/03, 2/09/04</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Specification***

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: --A MANUFACTURING METHOD FOR A THIN FILM MAGNETIC HEAD--.

### ***Claim Objections***

2. Claims 14-28 are objected to because of the following informalities:

Re. Claim 14: The phrase "a lower core" as recited in line 5 appears to be --the lower core--.

Re. Claim 15: The phrase "it" as recited in line 4 is not clear what the "it" is indicated. Clarification is required.

Re. Claim 16: The phrase "a coil insulating layer" and "a lower core" as recited in line 4, appears to be --the coil insulating layer-- and --the lower core--.

The phrase "a magnetic pole layer" as recited in lines 8-9 and "a gap layer" as recited in line 9, appears to be --the magnetic pole layer-- and --the gap layer--.

Re. Claim 17: The phrase "the lower magnetic pole layer" as recited in line 3, "the upper magnetic pole layer" as recited in line 4 appears to be --a lower magnetic pole layer-- and --an upper magnetic pole layer--.

Re. Claim 20: The phrase "the upper magnetic pole layer" as recited in line 3 appears to be --an upper magnetic pole layer--.

Re. Claim 23: The phrase "a limit" as recited in line 5 appears to be --the limit--.

Re. Claim 26: The phrase "the lower magnetic pole layer" as recited in line 3, "the upper magnetic pole layer" as recited in line 4 appears to be --a lower magnetic pole layer-- and --an upper magnetic pole layer--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 14, 17, 18, 20-22 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Dill Jr. et al. (US PAT. 6,226,149).

Dill Jr. et al. teach a process making a thin film magnetic head comprising: a step for depositing a recording portion composed of a magnetic pole layer (318) and a gap layer (316) on a lower core layer (306) as shown in Fig. 18; a step for depositing a coil insulating layer (320) on a lower core layer at the rear of the recording portion in a

height direction as shown in Fig. 20; a step for etching the coil insulating layer exposed with a limit so that a surface of the lower core layer is not reached, thereby to form a coil forming groove (326) in the coil insulating layer as shown in Fig. 22; a step for embedding a conductive material (328) in the coil forming groove formed in the coil insulating layer, thereby to form a coil layer (316) in the coil forming groove as shown in Fig. 24; a step for etching the coil layer and the coil insulating layer such that, when an upper surface of the recording portion is defined as a reference plane, an upper surface of the coil insulating layer and an upper surface of the coil layer are flush with the reference plane as shown in Fig. 24; and a step for depositing an insulating layer (334 as shown in Fig. 25) on the coil layer and the coil insulating layer, then depositing an upper core layer (340 as shown in Fig. 27) extending from a top of the insulating layer to an upper surface of the recording portion (see also col. 8, line 47 to col. 10, line 12).

As per claims 17 and 20 the recording portion is composed of the lower magnetic pole or an upper magnetic pole layer and the gap layer.

As per claims 18, 21 and 22 the gap layer is made of a nonmagnetic metal material or an inorganic insulating material such as  $\text{SiO}_2$  (as per claim 22) that permits plating with the magnetic pole layer.

As per claim 24 the coil insulating layer is formed of an inorganic insulating material such as  $\text{SiO}_2$ .

5. Claims 14, 15, 17, 18, 20-22 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Sasaki (US PAT. 6,195,872).

Sasaki teaches a process making a thin film magnetic head comprising: a step for depositing a recording portion composed of a magnetic pole layer (42) and a gap layer (41) on a lower core layer (36) as shown in Fig. 18A; a step for depositing a coil insulating layer (43) on a lower core layer at the rear of the recording portion in a height direction as shown in Fig. 19A; a step for etching the coil insulating layer exposed with a limit so that a surface of the lower core layer is not reached, thereby to form a coil forming groove (44) in the coil insulating layer as shown in Fig. 19A; a step for embedding a conductive material (45) in the coil forming groove formed in the coil insulating layer, thereby to form a coil layer (45) in the coil forming groove as shown in Fig. 20A; a step for etching the coil layer and the coil insulating layer such that, when an upper surface of the recording portion is defined as a reference plane, an upper surface of the coil insulating layer and an upper surface of the coil layer are flush with the reference plane as shown in Fig. 20A; and a step for depositing an insulating layer (46) on the coil layer and the coil insulating layer, then depositing an upper core layer (47 as shown in Fig. 21A) extending from a top of the insulating layer to an upper surface of the recording portion (see also col. 8, lines 9-62).

As per claim 15 the coil insulating layer is planarized until the coil insulating layer becomes flush with the upper surface of the recording portion as shown in Fig. 19A.

As per claims 17 and 20 the recording portion is composed of the lower magnetic pole or an upper magnetic pole layer and the gap layer as shown in Fig. 18A.

As per claims 18, 21 and 22 the gap layer is made of a nonmagnetic metal material or an inorganic insulating material such as alumina (as per claim 22) that permits plating with the magnetic pole layer.

As per claim 24 the coil insulating layer is formed of an inorganic insulating material such as  $\text{SiO}_2$ .

6. Claims 14, 16, 26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujisawa et al. (US PAT. 5,155,646).

Fujisawa et al. teach a process making a thin film magnetic head comprising: a step for depositing a coil insulating layer (31b) on a lower core layer (12) at the rear of the recording portion in a height direction as shown in Fig. 2C; a step for etching the coil insulating layer exposed with a limit so that a surface of the lower core layer is not reached, thereby to form a coil forming groove (a place of 19) in the coil insulating layer as shown in Fig. 2D; a step for embedding a conductive material (19) in the coil forming groove formed in the coil insulating layer, thereby to form a coil layer (19) in the coil forming groove as shown in Fig. 2D; a step for depositing a recording portion composed of a magnetic pole layer (33a) and a gap layer (16) on a lower core layer (12) as shown in Fig. 2G; a step for etching the coil layer and the coil insulating layer such that, when an upper surface of the recording portion is defined as a reference plane, an upper surface of the coil insulating layer and an upper surface of the coil layer are flush with the reference plane as shown in Fig. 2D; and a step for depositing an insulating layer (32) on the coil layer and the coil insulating layer, then depositing an upper core layer

(13) extending from a top of the insulating layer to an upper surface of the recording portion (see also col. 4, line 19 to col. 5, line 42).

As per claim 16 Fujisawa et al. teach that a step for depositing the coil insulating layer on a lower core layer, a step for forming a groove (33a' as shown in Fig. 2F) in the coil insulating layer in the height direction from a surface facing a recording medium, and a step for forming the recording portion (33a) composed of a magnetic pole layer and a gap layer (16) in the groove as shown in Fig. 2I.

As per claim 26 the recording portion is composed of the lower magnetic pole or an upper magnetic pole layer and the gap layer as shown in Fig. 2I.

As per claim 27 the gap layer is made of a nonmagnetic metal material or an inorganic insulating material such as SiO<sub>2</sub> that permits plating with the magnetic pole layer.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 19 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Dill Jr. et al. or Sasaki or Fujisawa et al.

Either Dill Jr. et al. or Sasaki or Fujisawa et al. teach all of the limitations as set forth above except the nonmagnetic material as recited in claim 19. At the time the



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invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to apply the brazing material as recited in the claimed invention because Applicant has not disclosed that the nonmagnetic material as recited in the claimed invention provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either Dill Jr. et al. or Sasaki or Fujisawa et al. because the nonmagnetic material as recited in the claimed invention would perform equally well the nonmagnetic material in either Dill Jr. et al. or Sasaki or Fujisawa et al. Therefore, it would have been an obvious matter of design choice to modify the nonmagnetic material of either Dill Jr. et al. or Sasaki or Fujisawa et al. to obtain the invention as specified in claims 19 and 28.

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Dill Jr. et al. in view of Hiner et al. (US PAT. 6,032,353).

Dill Jr. et al. teach all the limitations as set forth above except an insulating under-layer deposited on the lower core layer. Hiner et al. teach a process of making a thin film magnetic head including a process of forming an insulating under-layer (92A) deposited on a lower core layer (56) in order to protect the lower core layer as shown in Fig. 7N (col. 5, line 44 to col. 6, line 13). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify a process of fabricating a thin film magnetic head of Dill Jr. et al. by forming an insulating under-layer as taught by Hiner et al. in order to protect the lower core layer.

10. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Dill Jr. et al. in view of Hong et al. (US PAT. 6,466,401).

Dill Jr. et al. teach all the limitations as set forth above except a second coil layer electrically connected to the coil layer. Hong et al. teach a process of making a thin film magnetic head including a process of forming a second coil layer (70, 90) electrically connected to a first coil layer (20, 40) deposited on a lower core layer (125) in order to lowering impedance through an upper magnetic layer to improve the operating frequency of the write head as shown in Figs. 5-8 (col. 6, line 64 to col. 8, line 16). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify a process of fabricating a thin film magnetic head of Dill Jr. et al. by a second coil layer electrically connected to a first coil layer as taught by Hong et al. in order to lowering impedance through an upper magnetic layer to improve the operating frequency of the write head.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul D. Kim whose telephone number is 571-272-4565. The examiner can normally be reached on Monday-Friday between 6:00 AM to 2:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul D Kim  
Examiner  
Art Unit 3729